**BOS Rémi, PhD**

(Oct. 11 1986, 2 children --08/03/20 & 20/10/22--)

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**PROFESSIONAL EXPERIENCE**

01/10/2018 – present: **Institut de Neurosciences de la Timone, CNRS** (Marseille, France)

Scientific researcher (Tenure position at CNRS, Institute of Biological Sciences (INSB), Section 25th, Molecular and Cellular Neurobiology, Neurophysiology)

01/09/2016 – 30/09/2018: **Institut de Neurosciences de la Timone, CNRS** (Marseille, France)

Post-doctoral fellow in Neuroscience (F. Brocard team)

01/01/2013 – 31/08/2016: **Department of Molecular and Cell Biology & Helen Wills Neuroscience Institute**, (University of California, Berkeley, USA)

Post-doctoral fellow in Neuroscience (Marla Feller lab)

**EDUCATION & TRAINING**

01/02/2024 : **Habilitation à Diriger des Recherches (HDR)** (Aix-Marseille Univ., France)

01/10/2018 : **Chargé de Recherche Classe Normale (CRCN)** (Tenure position at CNRS, Section 25th CNRS, Molecular and Cellular Neurobiology, Neurophysiology)

01/09/2009 – 21/12/2012: **PhD degree** in Neuroscience

Institut de Neurosciences de la Timone, CNRS (Marseille, France)

Supervisor : Laurent Vinay

01/09/2008 – 30/06/ 2009: **Master degree** in Molecular and Cellular Neurosciences

Aix-Marseille Univ.(Marseille, France)

Supervisors : Laurent Vinay & Sophie Morel

01/09/2007 – 30/06/2009: **Magistère** in Sport Sciences

Department of Sport Sciences, Ecole Normale Supérieure **(**Rennes, France)

Supervisor : Jacques Prioux

01/09/2004 – 30/06/2007: **B.S degree** in Sport Sciences

Department of Sport Sciences, Rennes Univ.,(Rennes, France)

Supervisor : Jacques Prioux

**GRANTS & AWARDS**

2025: Recipient of the CNRS bronze medal

2024: Co-supervisor of PhD grant (French ministry for research, 3years) to Thibault Belloin (120K€)

2024: Research Partner from ANR PRC Rhythmoglia (PI: Jean-Marie Mangin) (610 K€)

2023: Research Partner from INT grant award (to F. Debarbieux) (CNRS UMR7289) (40K€)

2022: INT grant award “Fonds d’investissement” (CNRS UMR7289) (20K€)

2021: Research Partner from ANR JCJC BRAINSTORM (PI: David Moreau) (30K€)

2021: Co-supervisor of CIFRE PhD grant (3years) to V. Escarrat (co-supervision with Pr. F. Debarbieux) in collaboration with the Regenlife company (120K€)

2021: Supervisor of PhD grant (French ministry for research, 3years) to Tony Barbay (120K€)

2019: INT grant award “Fonds d’investissement” (CNRS UMR7289) (30K€)

2017: PRESTIGE-MARIE CURIE grant award (40K€, PCOFUND-GA-2013-609102)

2013: Travel grant for Cold Spring Harbor Laboratory Vision Course (CSH, USA) (2K$)

2013: Honor prize for the best thesis 2012 (Aix-Marseille University) (1K€)

2011: Travel grant for SfN meeting in Washington DC, USA (1K€)

2009-2012: PhD fellowship (French ministry for research) (90K€)

2007-2009: Undergraduate fellowship (ENS Cachan-Antenne de Bretagne) (60K€)

**PUBLICATIONS**

* Barbay T., Pecchi E., Ramirez-Franco J., Ivanov A., Brocard F., Rouach N., **Bos R**. Functional contribution of astrocytic Kir4.1 channels to spasticity after spinal cord injury. ***Brain***, 2025 doi: 10.1093/brain/awaf147
* Escarrat V, Reato D., Blivet G., Touchon J., Rougon G., **Bos R.**\* and Debarbieux F.\* Dorsoventral photobiomodulation therapy safely reduces inflammation and reduces sensorimotor deficits in a mouse model of multiple sclerosis. ***J. Neuroinflammation***, 2024 doi: 10.1186/s12974-024-03294-2, \*equally contributed
* Dumas N., Pecchi E., O’Connor R., **Bos R**., Moreau D. Infrared neuroglial modulation of spinal locomotor networks. ***Sci. Rep.,*** 2024 doi: 10.1038/s41598-024-73577-4
* Harris-Warrick R.,Pecchi E., Drouillas B.,Brocard F, **Bos R.** Effect of size on expression of bistability in mouse spinal cord. ***J. Neurophysiol.***, 2024 doi: 10.1101/2023.09.29.559784
* Drouillas B.,Brocard C., Zanella S., **Bos R.**, Brocard F. Persistent Nav1.1 and Nav1.6 currents drive spinal locomotor functions through nonlinear dynamics. ***Cell Rep.***, 2023 doi: 10.1101/2023.04.18.537411
* Barbay T., Pecchi E., Ducrocq M., Rouach N., Brocard F., **Bos R.** Astrocytic Kir4.1 channels regulate locomotion by orchestrating neuronal rhythmicity in the spinal network. ***Glia***,2023 doi: 10.1002/glia.24337
* **Bos R.**, Rihan K., Quintana P., El-Bazzal L., Bernard-Marissal N., Bartoli M., Jabbour R., Mégarbane A., Brocard F., Delague V. Smaller action potential and shorter axonal initial segment in hiPSC-derived motor neurons with mutations in *VRK1* ***Neurobiol. Dis.***, 2022 doi: 10.1016/j.nbd.2021.105609.
* **Bos R.**, Drouillas B., Bouhadfane M., Pecchi E., Korogod S., Brocard F. Trpm5 channels encode bistability of spinal motoneurons and ensure motor control of hindlimbs. ***Nat. Comm.*** 2021 doi: 10.1038/s41467-021-27113-x.
* **Bos R**., Harris-WarrickR.M., BrocardC., DemianenkoL.E., ManuelM., ZytnickiD., KorogodS.M., Brocard F. Kv1.2 channels promote nonlinear spiking motoneurons for powering up locomotion.***Cell Rep.*** 2018 doi: 10.1016/j.celrep.2018.02.093.
* **Bos R**., Gainer C., Feller M.B. Role for visual experience in the development of direction selective circuits. ***Curr. Biol***, 2016 doi: 10.1016/j.cub.2016.03.073.
* Rosa J.M.\*, **Bos R**.\*, Sack G.S., Fortuny C., Agarwal A., Bergles D.E., Flannery J.G., Feller M.B. Neuron-glia signaling in developing retina mediated by neurotransmitter spillover. ***Elife***, 2015

**\*these authors contributed equally to this work** doi: 10.7554/eLife.09590.

* Vlasits A.L., **Bos R.**, Morrie R.D., Fortuny C., Flannery J.G., Feller M.B., Rivlin-Etzion M. Visual stimulation switches the polarity of excitatory input to starburst amacrine cells. ***Neuron***, 2014 doi: 10.1016/j.neuron.2014.07.037.
* **Bos R**., Sadlaoud K., Buttigieg D., Liabeuf S., Boulenguez P., Brocard C., Haase G., Bras H., Vinay L. Activation of 5-HT2A receptors up-regulates the function of the neuronal K-Cl cotransporter KCC2. ***Proc Natl Acad Sci USA,*** 2013 doi: 10.1073/pnas.1213680110.
* **Bos R**., Vinay L. Glucose is an adequate energy substrate for the depolarizing action of GABA and glycine in the neonatal rat spinal cord in vitro. ***J. Neurophysiol*.** 2012 doi: 10.1152/jn.00571.2011.
* **Bos R**., Brocard F., Vinay L. Primary afferent terminals acting as excitatory interneurons contribute to spontaneous motor activities in the immature spinal cord ***J. Neurosci.*** 2011 doi: 10.1523/JNEUROSCI.0068-11.2011.
* Viemari JC, **Bos R**, Boulenguez P, Brocard C, Brocard F, Bras H, Coulon P, Liabeuf S, Pearlstein E, Sadlaoud K, Stil A, Tazerart S, Vinay L. Chapter 1-importance of chloride homeostasis in the operation of rhythmic motor networks. ***Progr. Brain. Res*.** 2011 doi: 10.1016/B978-0-444-53825-3.00006-1.
* Boulenguez P, Liabeuf S, **Bos R**, Bras H, Jean-Xavier C, Brocard C, Stil A, Darbon P, Cattaert D, Delpire E, Marsala M, Vinay L. Down-regulation of the potassium-chloride cotransporter KCC2 contributes to spasticity after spinal cord injury. ***Nat Med*.** 2010 doi: 10.1038/nm.2107.

**INVITED & CONTRIBUTED TALKS (5 PAST YEARS)**

* “Exploring the neuroglial crosstalk: advances in understanding spinal sensorimotor networks and their dysfunctions” Strasbourg, FRANCE, Feb. 2025. Invited by A. Charlet
* “Astrocyte-targeting therapy for reducing spasticity after spinal cord injury in mice” at Institute of Neurophysiopathology, Marseille, FRANCE, Dec. 2023. Invited by E. Nivet
* “The embodied CNS: Neuron-glia crosstalk in spinal rhythmicity” at the 5th edition of the international conference of the Institute of Neurosciences of La Timone, Marseille, FRANCE, Sept. 2022 Invited by G. Masson
* “A size principle for bistability in mouse lumbar motoneurons” at the International Motoneuron Society meeting, Banff, CANADA, June 2022. Invited by M. Gorassini
* “Astrocytic modulation of neuronal rhythmicity through K+ uptake” at NeuroFrance 2021, the International virtual symposium organised by the French Neuroscience Society (webinar), May 2021. Invited by M. Thobby-Brisson
* “Plasticity of the spinal motor networks: a focus on the neuron-glial interaction” at IBDM (Luminy Campus, Marseille, France), PhD Program Tutored Seminar, Oct. 2020. Invited by F. Mann
* “The astrocyte-Motoneuron crosstalk in the spinal motor network after spinal cord injury” at CERIMED, Scientific morning of Carnot STAR, March 2020. Invited by G. Gallon

**EVALUATION COMMITTEE MEMBER (5 PAST YEARS)**

* Member of the scientific board from the COFUND project (led by W. Zaaraoui, A. Montagnini), 2025
* Reviewing member of the thesis advisory committee (CST) Anin Khan (PhD candidate, INT, supervised by Jean-Marie Mangin, Paris), May 28, 2025
* Reviewing member of the thesis advisory committee (CST) Gabrielle Dosilie (PhD candidate, INT, supervised by Eduardo Gascon, Marseille), May 28, 2025
* Examining committee member for Manon BARBOT’s thesis defense (Aix-Marseille University) January 31, 2025. PhD supervisor: Jean-Denis Troadec
* Examining committee member for Mahalakshmi DHANASEKAR’s thesis defense (Sorbonne University) December 11, 2024. PhD supervisor: Claire Wyart
* Examining committee member for Nathan DUMAS’s thesis defense (EMSE) November 07, 2024. PhD supervisor: David Moreau
* Invited committee member for Yiannis POULOT’s thesis defense (Paris-Saclay University) October 02, 2024. PhD supervisor: Carole Escartin
* Examining committee member for the “Christine Goudot Prize”, Fondation de France, Sept. 2024
* Reviewing member of the thesis advisory committee (CST) Gabrielle Dosilie (PhD candidate, INT, supervised by Eduardo Gascon, Marseille), July 12, 2024
* Examining committee member for Agathe Lafont’s thesis defense (Sorbonne University) December 15, 2023. PhD supervisor: Jean-Marie Mangin
* Reviewing member of the thesis advisory committee (CST) of Nathan Dumas (PhD candidate, Ecole des Mines de Gardanne, supervised by David Moreau), June 30, 2023

**ORGANISATIONS OF CONFERENCES & MEETINGS (5 PAST YEARS)**

* Organizing Committee Member of the European Glia Meeting (EUROGLIA 2025), July 7-11, 2025
* Co-Organizer of the Workshop: Mechanisms of CNS Transient Dynamics, March 14-15, 2024
* Organizing Committee Member of the INT Meeting (10th Anniversary), Sept. 28-30, 2022
* Organizing Committee Member of the European Glia Meeting (EUROGLIA 2021), July 7-10, 2021
* Organizer of « Journée Portes Ouvertes de l’INT CNRS UMR7289 », Nov.-Dec. 2017-2018-2019

**TEACHING, SUPERVISING & MENTORING (5 PAST YEARS)**

* **Teaching**:

Winter 2025 : Lecturer, Master 1 Neuroscience Program (Aix-Marseille University), 16 hours, Course : Integrated Neurosciences, “The Role of Glial Cells in Spinal Sensorimotor Integration”

* **Supervisions**:

Dec. 2024- Dec. 2026: Céline Ertlen, Post-doctoral Fellow, working on “Contribution of glio-glial interactions in spinal rhythmicity”

Oct.2024- Oct. 2027: Thibault Belloin, PhD candidate co-supervised with J. Laurin (INMED) and myself, working on “Metabolic regulation of sensorimotor functions”

April. 2021- May 2024: Vincent Escarrat, PhD candidate co-supervised by F. Debarbieux and myself, working on “Evaluation par microscopie intravitale de l’intérêt de la photobiomodulation sur les poussées inflammatoires d’un modèle murin de Sclérose en Plaques” funded by ANRT.

Oct. 2021- Oct. 2024: Tony Barbay, PhD candidate working on the “Contribution of the neuro-glia crosstalk in the plasticity of the spinal motor network” funded by a 3 years fellowship from the French ministry for research.

From 2020 to 2025: 2 BSc Degree candidates (Brahmia Chainese & Maxime Racchini) and 5 MSc Degree candidates (Antoine Campergue, Rémi Rigaud, Thibault Belloin, Darine Gadacha, Tony Barbay)

**ACTIVITIES GENERAL INTEREST & SCIENCE DIFFUSION**

* Scientific contributor of “La Semaine du Cerveau” and “Recherches dans la vile“ (Marseille) (2025)
* Member of the Local Organizing Committee for EUROGLIA2025 (July 2025, Marseille)
* Co-founder and active member of the “Gender equity & Diversity Committee” at INT, CNRS UMR7289, 2023
* Member of the “Ethic committee” CE71 at INT, CNRS UMR7289, from June 2018 to Oct. 2020
* Member of the Local Organizing Committee for EUROGLIA2021 (July 2021, Virtual event), and for the 10th anniversary of INT, “A decades’perspective on integrative neuroscience” (Sept. 28-30, 2022, Marseille).
* Scientific contributor of “La Nuit européene des chercheurs” (2017, 2018)
* High school internship supervisor once a year from 2018 (Léo Massot, Maya Ayrault, Anaïs Cabiran, Iban Caprise, Malika Azakir, Noémie Moreau).

**ADHOC REVIEWS**

Journal of Neurophysiology (2012), eLife (2016), Psychopharmacology (2020), Frontiers in Cell and Developmental Biology (2022), Frontiers in Neural Circuits (2023), European Journal of Neuroscience (2023), Frontiers in Physiology (2024), Glia (2024), European Journal of Neuroscience (2025).

Co-editor with A. Verkhratsky and S. Korogod of the research topic “Neuro-glial communication through the dynamic interstitial space” in Frontiers in Cellular Neuroscience (2025)

**SKILLS & LANGUAGES**

**Languages**: English (fluent), French (native), Spanish (basic)

**Programming language:** Matlab (basic), Python (basic)

**Experimental techniques:** *in vitro* electrophysiology(Patch-clamp recordings of hIPSCs), *ex vivo* electrophysiology(intracellular recordings of astrocytes, neurons (retina & spinal cord) & extracellular recordings of retina & spinal cord), *in vivo* electrophysiology (EMG recordings of gastrocnemius, FSL), two-photon calcium imaging of astrocytic and neuronal signaling, *in vivo* injections of AAVs or retrograde tracers, *in vivo* drug micro-injection, *ex vivo* DREADDS & optogenetics, behavioral motor and vision tests, perfusion, immunohistochemistry, live tracking and analysis of motor behavior with DeepLabCut.

**ACTIVE SCIENTIFIC COLLABORATIONS**

* **Dr. David Moreau** (Ecole des Mines de Saint-Etienne, Centre Microelectronique, Gardanne, France), bioelectronic of infra-red illumination for studying neuro-glia interaction.
* **Dr. Lucile Ben Haïm** (UMR9199, CNRS/CEA, Université Paris-Saclay, Fontenay-aux-Roses, France), electrophysiological recordings of neuron-glia interaction in the hippocampal network
* **Dr. Carole Escartin** (UMR9199, CNRS/CEA, Université Paris-Saclay, Fontenay-aux-Roses, France), electrophysiological recordings of reactive astrocytes diversity in the prefrontal cortex
* **Pr. Nathalie Rouach** (Collège de France, Paris, France), neurobiology of astroglia with transgenic mice.